DYNAMICS OF FORMATION OF NATURAL RESISTANCE OF KARAKUL SHEEP LAMBS CONTAINED IN VARIOUS ECOLOGICAL CONDITIONS

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ABSTRACT

The dynamics of the formation of the natural resistance of Karakul sheep lambs contained in various ecological conditions were studied. The titer of anticolibacterial antibodies and the titer of normal hemagglutinins containing immunoglobulins G and M in the blood serum of Karakul sheep lambs of 1-3-5-7 weeks of age served as indicators of natural resistance. The influence of the invasive process on the indices of the natural resistance of Karakul sheep lambs is determined. The research results show that the invasive process significantly inhibits the natural resistance of Karakul sheep lambs.

Key words: natural resistance, immunoglobulins, agglutinin, hemagglutinin, blood serum, antibodies, immunity, fascioliasis, invasion.

INTRODUCTION

Nowadays, the problem of natural resistance of animals has acquired particular importance. This is primarily due to the fact that with the transfer of animal husbandry to industrial technology, it became necessary to develop new, more effective genetic methods for improving the productivity of breeding qualities of animals, increasing their constitutional strength and natural resistance [1,4,5].

The parameters of natural resistance an indicator of against to conditional-pathogenic microorganisms.

They are the natural general infectious resistance of animals. We took the parameters of natural resistance against to conditional-pathogenic microorganisms.

Conditional-pathogenic microorganisms have become one of the leading problems of modern infectious pathology. This is due to the fact that any factor of a medico-veterinary, socio-economic and ecological nature leads to an increase in their pathognomic significance [1,4,7].

A systematic approach to the problem of conditional-pathogenic microorganisms provides for a differential assessment of the role of a macro and microorganism as interacting with the elements of the system.

On the one hand, the species, breed, age, constitutional, individual and other characteristics of animals attract attention, the other hand, the microbiological parameters of their habitat [3,4].

Indeed, our research shows that in the organism of farm animals in postnatal ontogenesis, a natural specific immunity is formed against to coli-bacteria, salmonella, pasteurella, pseudomonas, staphylococcus and streptococci, the primary determinant of which is colostral immunity.

Moreover, colostral immunity has a positive effect on the formation of active immunity of animals against to the microbial environment [1,2,3].

With the development of industrial technology of animal husbandry, the problem of developing and methods of targeted control of parasitocenoses and symbiocenoses on the basis of studying the interaction of viruses, bacteria, fungi, protozoa, helminths and arthropods both inside the animal body and in the environment becomes especially acute [1,3].

In the scientific literature, the issues of natural resistance in different types of farm animals, depending on age, season of the year, keeping conditions, level of feeding, the presence of pathological processes, are covered quite widely, at the same time, in the genetic-selection, population aspect, they have not been considered [1, 2,3,4,5].

All this indicates the topicality of this problem and requires an urgent search and introducing into veterinary practice of new methods and means, prevention and treatment of diseases caused by invasive pathogens [1,2].

In connection with the fact that the indicators of natural resistance of animals is a universal link connecting all the elements of parasitocenosis into a single system, we considered it necessary to analyze the influence of invasion on the livestock of animals.

The hepatic fluke was chosen as the model parasites; it is the most frequently recorded invasive pathogens of farm animals.

The aim and objectives of the research

The aim of our research study the dynamics of the formation of natural resistance of Karakul sheep lambs kept in various environmental conditions.

The objectives of our research to determine the influence of the invasive process on the indices of natural resistance of Karakul sheep lambs.

Materials and methods of research

The experiments were carried out on newborn Karakul sheep lambs of different ages in the Nurata farm of the Nurata district of the Navoi region and in the Maibulak farm of the Koshrabad district of the Samarkand region of the Republic of Uzbekistan.

The titers of specific agglutinins in RA according to Wright were determined in the blood serum of the experimental animals.

As an antigen for staging the agglutination reaction, a daily living culture of coli-bacteria isolated in the laboratory of microbiology of Uzbek scientific – research Institute of veterinary was used.

The titers of normal hemagglutinins were determined in relation to the chicken erythrocytes washed with saline.

The content of immunoglobulins G and M in the blood serum was determined in the reaction of immunodiffusion according to Mancini.

Research results.

To solve this problem, scientific experiments were set up in production conditions. Only 150 Karakul sheep lambs were tested (75 heads from the "Maibulak" farm and 75 heads from the "Nurata" farm).

The flocks of sheep from the "Maibulak" karakul sheep farm, where the experiments were carried out, were selected on the basis of fatness, because it is this indicator that affects natural resistance.

However, the sheep from this flock grazed in the foothill pastures and were infected with fascioliasis. The extent of invasion was 69%.

The flocks selected from the Nurata farm grazed in the Kyzylkum conditions, were not infected with fascioliasis, and in terms of fatness corresponded to the compared flock.

In both flocks there were mainly black Karakul sheep.

Natural resistance in the compared flocks was studied on suckling Karakul sheep lambs, because it reflects the resistance of ewes, and, consequently, their invasion (table 1 and 2).

The titer of anticolibacterial antibodies and the titer of normal hemagglutinins containing immunoglobulin G and class M in blood serum served as indicators of natural resistance.

The most important protective functions are performed in the body by immunoglobulins. These include all antibodies contained in blood serum and other secrets. Five classes of immunoglobulins have been established: A, D, E, M, G [1,4].

Class G immunoglobulins are transformed into antibodies and appear in the serum later than others, persist for a long time, are active in serological reactions and reflect the specificity of the antigen. Apparently, this class belongs to the main protective role and its nature depends on their number and duration of preservation in the body [1,4].

At the same time, we believed that it would be difficult to directly compare the indicators of natural resistance of infected and non-infected ewes with fascioliasis, since the factors uncontrolled by us may affect the sheep kept in different environmental conditions.

The results of the experiments (table 1) carried out in the herds infected with fasceoliasis in the Maibulak farm shows that the amount of immunoglobulins M and G in the blood serum of Karakul sheep lambs 1-3-5-7 weeks of age fluctuated at approximately the same level.

Table 1 The dynamics of the formation of natural resistance in lambs, expressed in the flock infected with fasceoliasis at the "Maibulak" farm $(M \pm m)$

№	Indicators natural resistance	Age and number of Karakul sheep lambs (n =)				
		1 week (n = 75)	3 weeks (n = 75)	5 weeks (n = 75)	7 weeks (n = 75)	
1	Content of immunoglobulins M (mg / ml)	$2,20 \pm 0,02$	$2,05 \pm 0,03$	1,91 ± 0,02	$1,97 \pm 0,2$	
2	Immunoglobulin G content (mg / ml)	$11,28 \pm 0,25$	$11,01 \pm 0,23$	$11,94 \pm 0,20$	$12,62 \pm 0,24$	
3	Titer of specific agglutinins against coliantigens	1:100 ± 8,7	1:10 ± 8,7	1:150 ± 4,2	1:375 ± 11,0	
4	The titer of normal hemagglutinins	$1:10 \pm 9,3$	$1:35 \pm 6,4$	$1:28 \pm 9,3$	$1:75 \pm 19,7$	

As can be seen from Table 1, the titers of specific agglutinins against coli-antigens and hemagglutinins in Karakul sheep lambs of 1-3-5-7 weeks of age fluctuated at approximately the same level. At the 3rd week of postnatal life, the titer of agglutinins against coli-antigens sharply decreased (1:10), at 5 weeks the titer of anticolibacterial agglutinins increased again to the previous values and even higher (1: 150), and in 7 weeks it increased markedly (1: 375).

The results of experiments (table 2) carried out in the farm "Nurata" not infected with fasceoliasis shows that the amount of immunoglobulins G in the blood serum of Karakul sheep lambs at 5 weeks of postnatal life decreased (6.23 mg/ml), and at 7 weeks again increased to 8,54 mg/ml.

Table 2 The dynamics of the formation of natural resistance in lambs, expressed in the "Nurata" farm not infected with fasceoliasis ($M \pm m$)

№	Indicators natural resistance	Age and number of Karakul sheep lambs (n =)				
		1 week (n = 75)	3 weeks (n = 75)	5 weeks (n = 75)	7 weeks (n = 75)	
1	Content of immunoglobulins M (mg / ml)	$2,82 \pm 0,16$	$2,74 \pm 0,15$	$3,12 \pm 0,11$	$2,45 \pm 0,10$	
2	Immunoglobulin G content (mg / ml)	$12,42 \pm 0,22$	$12,28 \pm 0,40$	$6,23 \pm 0,61$	8,54 ± 0,30	
3	Titer of specific agglutinins against coliantigens	1:185 ± 4,2	$1:60 \pm 5,7$	1:350 ± 9,3	1:745 ± 5,7	
4	The titer of normal hemagglutinins	1:26 ± 8,7	1:30 ± 8,7	1:14 ± 8,7	1:40 ± 11,0	

As can be seen from table 2, on this experience, also the titers of specific agglutinins against coliantigens and hemagglutinins in Karakul sheep lambs 1-3-5-7 weeks of age fluctuated at approximately the same level. At the 3rd week of postnatal life, the titer of agglutinins against coliantigens sharply decreased (1:60), at 5 weeks the titer of anticolibacterial agglutinins increased again to 1: 350), and at 7 weeks it increased markedly to 1: 375.

It turned out that two waves of immune response of lambs from the same experimental group have a different nature.

If we take into account that the immune status and immunity in general, by their nature, can be of two types: passive and active, then we will have to assume that the first wave of growth of the agglutinin titer is passive, i.e. non-post-vaccination, and the second wave - active - post-vaccination or other origin.

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At 3 weeks of age, when there was an immune decline in all three agglutinins, a clear trend was not revealed. It can be assumed that this indicates the transitional nature of this period, when the body passes from collostral immunity to the creation of active immunity.

The wave-like immune response in newborn lambs suggests that, starting from the second half of the month of postnatal life, the mechanisms of active immunity are activated.

Discussion

A comparative assessment of the results of studies carried out on lambs (tables 1 and 2 of the farm) showed that up to one month of age, when natural resistance is still colostral in all parameters by which the natural resistance of animals is assessed, lambs (75 heads) from the Maibulak farm reliably lag behind their peers from the Nurata farm (75 heads).

The differences in the content of immunoglobulins of both classes and in the titers of specific agglutinins against coli-bacterial antigens were especially striking. From the second month of life, when lambs develop their own, active natural resistance, these differences began to smooth out.

Moreover, in terms of the content of class G immunoglobulins, which correlates with the level of immunity, and in terms of the titer of normal hemagglutinins, the lambs of the Maibulak state farm began to prevail over their peers from the Nurata farm.

However, in terms of the content of class M immunoglobulins, which reflect the powers of the immunocompetent system, and in terms of the titer of anticolibacterial antigens, the indices of Karakul sheep lambs at the Nurata farm continued to be twice as large.

It should be emphasized here that the invasive process affects the indicators of the natural resistance of animals, and inhibits it.

Conclusions

The results of studies carried out on Karakul sheep lambs kept in various environmental conditions showed:

- 1. By all the parameters by which the natural resistance of animals is assessed, the Karakul sheep lambs from the "Maibulak" farm are significantly behind their peers from the "Nurata" farm.
 - 2. The invasive process significantly inhibits the natural resistance of Karakul sheep lambs.
- 3. The influence of the invasive process on the indices of natural resistance can be revealed only in studies on a large number of animals.

Thus, it can be concluded that the natural resistance of animals has multifaceted features.

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